

Introduction

THE OFFICIAL BIRTH DATE OF THE AIDS EPIDEMIC IS 5 June 1981. In an article of fewer than 500 words published in the Centers for Disease Control's (CDC) *Morbidity and Mortality Weekly Report*, American clinicians described a cluster of five cases of *Pneumocystis carinii* pneumonia, a very rare infection of the lungs hitherto seen only in patients with severely compromised immune systems. These five initial cases were diagnosed between October 1980 and May 1981. All were gay men living in Los Angeles who had previously been healthy and were not receiving drugs that suppressed the body's immune response. Quite a strange coincidence.¹

At the time, the standard treatment for *Pneumocystis* pneumonia was an old drug called pentamidine, developed during WWII to treat sleeping sickness, which happened to be active against *Pneumocystis*. Pentamidine was not commercially available since the market was too small and it had to be distributed centrally from the CDC in Atlanta on a case-by-case basis. An astute CDC technician found it strange to have received several requests for pentamidine within a short period from hospitals in California and New York, for patients not known to be immunocompromised. This became the first step in the identification of the new syndrome by this federal agency, which then led research in the USA about this emerging unknown disease and the fight against it. Funding at the start was woefully inadequate: to put it mildly, the Reagan administration was not receptive to requests for funds to investigate and stamp out a disease that was striking homosexuals, whom it equated with perverts who richly deserved this divine punishment.²

Nobody could have imagined that, within four decades, nearly forty million people would have died of AIDS. By 2018, another thirty-eight million were living with its HIV aetiological agent (two-thirds in sub-Saharan Africa), making it by far the most dramatic epidemic since the Black Plague devastated Europe 500 years ago. Despite much improved availability of antiretroviral drugs in the southern hemisphere, which was a miracle of international solidarity, 800,000 deaths are added to this sorry total each year. This is still a net improvement compared to the record number of 1.9 million deaths in 2005.³

Since that fateful day in 1981, more than 400,000 scientific articles and thousands of books have been published on HIV/AIDS. Most are biomedical, while others analyse the psychosocial, historical, political, economic or geographic features of AIDS. Thus, the history of HIV/AIDS from 1981 to 2020 has been described in great detail. *And the Band Played On* by Randy Shilts and *The Coming Plague* by Laurie Garrett contain fascinating descriptions of the early years of the pandemic in the USA and Europe, including the heroic response of the few and the fatal denial of the many. Shilts, a gay journalist from San Francisco, died of AIDS a few years after his book appeared. Some books chronicled the AIDS epidemic in Africa after first describing the disease, its devastating impact on the lives of so many, a few success stories and many more failures in the response to HIV/AIDS. The most tragic case was South Africa, where President Mbeki, Mandela's successor, continued for a decade to deny that AIDS was caused by a sexually transmitted virus. How can one combat a contagious disease if it is believed to be a nutritional deficit linked to poverty? For a summary of the dissemination of the virus between 1981 and 2006, I recommend John Illiffe's *The African AIDS Epidemic: A History*.^{2,4–6}

What happened before 1981 – how did the human race reach that point? – had only been addressed in *The River: A Journey Back to the Source of HIV and AIDS*. This book was written in support of the hypothesis that the emergence of HIV/AIDS was triggered by the contamination of an oral poliomyelitis vaccine with a simian immunodeficiency virus (SIV) through the use of chimpanzee cells during vaccine production. There is now overwhelming evidence that this did not happen, as we will see later.⁷

This book summarises and assembles various pieces of the puzzle that have gradually been delineated over the last two decades by a small group of investigators, to which I have added historical and epidemiological research of my own. Some elements are irrefutable, such as the notion that the *Pan troglodytes troglodytes* chimpanzee is the source of HIV-1. Other elements are less clear – for example, the exact moment of cross-species transmission (sometime in the first two or three decades of the twentieth century). Since the publication of the first English edition of this book, additional research has helped to refine some aspects of the story, to confirm a number of hypotheses and to generate a new one to be described at the end of this book. Some of the comments that I received also led me to reconsider a few specific points of the story.

My own contribution focused around the idea that colonial-era medical interventions requiring the massive use of re-usable syringes and needles jump-started the epidemic by expanding the number of infected individuals from a handful to a few dozen or a few hundred. In a burgeoning urban centre, this generated a critical mass at which point sexual transmission of the virus became preponderant, starting in core groups of sex workers and their male clients and later spreading to the rest of the adult population, with no going back: dissemination across Africa, and beyond this initial crucible, was now inevitable.

Some parts of the story rely on circumstantial evidence, such as the possible contribution of the blood trade in triggering the epidemic in Haïti, from where it moved into the USA. Potentially sceptical readers should look at the whole story before making up their minds. I believe it is coherent, and that the weaker parts are supported by a strong body of evidence immediately before or after these uncertain areas.

My own background is that of an infectious diseases physician and epidemiologist, not a historian. A historian would no doubt have spent more time than I did analysing some underlying processes, such as the relationship between colonised and coloniser, or the impact of the crude racism of this period on the attitudes and behaviours of these two groups, or the sometimes ambiguous motivations of the medical profession. An epidemiologist, on the other hand, wants first and foremost to understand how the very first case happened, how the second was infected, then by what mechanisms the number rose to 100, 1,000, then 1,000,000

people infected, what routes the virus took as it came out of Africa, and so on. In this case, however, reconstructing the dynamics of a virus over nearly 100 years requires a broad understanding of European colonialism in central Africa and its many and varied impacts on the populations living there, which I spare no effort to provide.

I started my career in the early 1980s as a medical officer in a bush hospital in Zaire, where I spent the four most challenging years of my life. The type of medicine that I practised there was not much different from that of my colonial-era predecessors: approximate diagnoses, empirical treatments, lack of human and material resources, systematic re-use of syringes, needles and other medical supplies (in Africa, shortages are at the root of all recycling). And I would add: complete isolation from the rest of the planet in terms of scientific knowledge. This was long before the Internet, mobile phones and other devices that now interconnect the whole of humanity, including villages in the African bush. If I had a question about some subject or other, I had to make do with the fifteen or so reference books I'd brought with me. If I couldn't find the answer there, I had to improvise and learn to live with uncertainty and error, but without feeling guilty about any mistakes since my colleagues and I knew that we were doing the best we could.

I developed a fascination with sleeping sickness, an almost mythical tropical disease that happened to be endemic in my district and around which I conducted research for the next two decades. Since treatments for this disease had not changed for forty years, to understand the rationale (and sometimes irrational reasons) for these old treatments and try to improve them, I had no choice but to search for and read articles going back to the colonial era; this was my first foray into the history of tropical medicine. When I returned to Canada on leave, I always made a regenerative stop at the library of the Institute of Tropical Medicine in Antwerp, where I overheated the photocopier.

Eventually, I had to face facts: career prospects for a general practitioner expatriate in Africa were non-existent in the face of a growing number of national graduates, so I went back to school. After completing my training in infectious diseases in Canada, I returned to Africa, this time as a clinical researcher at the Medical Research Council Laboratories in The Gambia, a tiny country in West Africa whose borders

remain an eloquent testimony to the absurdity of the colonial division of the African continent. There I worked on the epidemiology of HIV-2 infection and its interaction with sexually transmitted diseases. The Pasteur Institute had just identified this second human immunodeficiency virus in some West African patients, and their British colleagues had decided to confront it from a research centre located in the heart of the endemic area. By chance, they had front-row seats. In the course of my investigations, I met most of the few hundred Senegalese prostitutes who charged their Gambian brothers rock-bottom prices for a few moments of pleasure.

I returned to Canada in 1990 as an academic infectious diseases physician. I also coordinated AIDS control projects in central and West Africa, which provided a large number of sex workers with preventive and curative care. Contemporary prostitution in Africa is a subject I am familiar with, especially at the 'low end' of the market, where sex costs just a dollar or two.

I studied for a master's degree in epidemiology during a sabbatical. Epidemiology is a science that connects exposures (for instance, to some infectious agent) and outcomes (such as developing AIDS or cancer, death, etc.), with the ultimate aim of reducing the frequency of these adverse outcomes. I won't use much epidemiology in this book, though I confess to an inborn love of numbers which, Mark Twain notwithstanding, can often prove or disprove an argument.

Eventually these various professional interests coalesced, when I belatedly and with more than a little luck understood that there was probably a link between HIV-2 infection in Guinea-Bissau, its epicentre, and programmes to control sleeping sickness during the colonial era, when that country was known as Portuguese Guinea. An epidemiological study among elderly individuals in Bissau, my first incursion into this area, confirmed that subjects who had been treated for sleeping sickness or tuberculosis decades before were more likely to be HIV-2-infected. In contrast with HIV-1, HIV-2 infection is compatible with prolonged survival, which enabled us to document such associations with very simple tools: a good questionnaire and a few drops of blood on blotting paper.⁸

I realised that, during my time in Zaire, patients under my care were probably infected with HIV-1 through health care. In the rather primitive

110-bed Nioki hospital in the Mai-Ndombe region about 500 km north-east of Kinshasa, we used glass syringes and re-usable needles. Normally, these would go through the hospital's autoclave after each use, which should have killed all pathogens, including viruses. However, I did not pay too much attention to how long the nurses boiled them in simple saucepans between patients when the hospital ran out of electricity and the autoclave could not be used. Power outages could last up to two months at a time, when the whole country was short of the diesel fuel needed for generators. These crises were the result of the appalling governance of this unfortunate nation. When the president and his cronies seized all the available foreign currency in the central bank to purchase another chateau on the Côte d'Azur or to fly in thousands of bottles of their favourite champagne, the oil companies stopped importing since they were not interested in being paid in zaires, the local currency, whose value melted away like snow in the sun. The economy of the entire country stopped until the government managed to find the dollars needed to replenish fuel stocks.

For sleeping sickness patients (up to 400 per year), we mostly relied on intravenous injections of an old arsenical drug called melarsoprol. Despite unflinching support from the Belgian technical assistance, melarsoprol was in short supply (some sleeping sickness patients died while waiting for the drug to be delivered), so that even 0.1 ml remaining in the vial after administering the dose for one patient would be used for the next. Wasting it was not an option.

I also remember the unfortunate tuberculosis patients who were given intramuscular (IM) injections of streptomycin every day for sixty days (or even longer if they could not tolerate one of the oral anti-tuberculous drugs), with dramatic side effects: the drug was toxic to the inner ear, and many patients had a hard time walking or even standing, some of them permanently. The medical profession endlessly complained that African tuberculosis patients did not follow treatment plans; in fact, it was a miracle that two-thirds completed the prescribed regimen! Although that time was not so long ago, even if well before Bill Gates and the Global Fund, 'international health' resources were an order of magnitude lower than they are today, and the much more effective and less toxic treatment for tuberculosis comprising only oral

meds was deemed far too expensive at \$50 per patient compared to \$10 for the streptomycin-based regimen.

Potentially even worse, in the twenty or so rural health centres that I supervised, several of which could only be reached by dugout canoe, formol tablets were put in a metal box along with the syringes and needles as a sterilisation measure since the tablets gave off antiseptic fumes. Abscesses following injections were rare, so this process killed the bacteria, but what about the viruses? As for blood transfusions, totalling about 200 per year administered mainly to children suffering from severe malaria, no lab tests were done to verify that the blood did not contain any infectious agents. Necessity is the mother of invention, but also of risk, and we sometimes gave transfusions without knowing the blood group of the donor or recipient (shortage of reagents), based on a simple compatibility test. Some lives were saved through these unorthodox practices.

I do not believe that transmission via medical intervention plays an important role in HIV dynamics today, and I agree with the experts that it contributes to less than 5% of recent HIV infections. Nevertheless, even one case is unacceptable, a betrayal of the old adage *Primum non nocere*. However, I became convinced that transmission during health care contributed to the simultaneous but hardly coincidental emergence of HIV-1 and HIV-2 in different parts of the African continent 50–75 years ago.⁹

These were sobering thoughts, and I started trying to connect the dots in the history of HIV. This book is the result of these efforts over many years. It would not have been possible without the support of my wife Lucie, a Congolese nurse, who kept my interest in Africa very much alive. Several relatives and friends died of an AIDS-like illness, after and also before the disease was identified in Africa. In our case, we didn't need to search too far to satisfy ourselves that the disease did in fact exist in central Africa before 1981.

Some may say that understanding the past is irrelevant, what really matters is the future. I disagree. There are at least two good reasons for attempting to elucidate the factors behind the emergence of the HIV pandemic. First, we have a moral obligation to the millions of human beings who have died, or will die, from this infection. Second, this tragedy

was facilitated (or even caused) by human interventions: colonisation, urbanisation and probably well-intentioned public health campaigns. Hopefully, we can gain collective wisdom and humility that might help to avoid triggering another such disaster in the coming decades. To quote philosopher George Santayana, ‘Those who cannot learn from history are doomed to repeat it.’